

REMARKS

Claims 1-4, 6-10 and 15 have been rejected under 35 USC 103(a) as being unpatentable over Bereman in view of Garrido et al. Claim 4 has been rejected under 35 USC 103(a) as being unpatentable over Bereman in view of Garrido et al and further in view of Baur et al. Claims 11-14 and 16 have been rejected under 35 USC 103(a) as being unpatentable over Bereman in view of Garrido et al and further in view of Hershe et al. Applicant respectfully traverses these grounds of rejection and once again urges reconsideration in light of the following comments.

The instant invention is directed to a tobacco smoke filter which contains activated carbon which has a micropore volume provided by micropores of under 2 nm pore diameter of at most 0.3 cm³/g (N₂), and in which carbon mesopores of 2 to 50 nm pore diameter provide a mesopore volume of at least 0.25 cm³/g (N₂).

A second embodiment of the present invention is directed to a tobacco smoke filter which contains activated carbon having a micropore volume provided by micropores of under 2 nm pore diameter being at most 0.3 cm³/g (N₂) and in which carbon mesopores of 7 to 50 nm pore diameter provide a mesopore volume of at least 0.12 cm³/g (Hg).

The present invention is based on the discovery that a tobacco smoke filter containing activated carbon having a specified micropore and mesopore relationships is able to provide a satisfactory level of flavorant delivery while simultaneously effectively removing vapor phase contaminants from the tobacco smoke. As stated previously, in the present invention, the activated carbon must have the claimed micropore and mesopore volume with the micropores and mesopores having the claimed parameters in order to achieve the beneficial properties associated with the present invention. It is respectfully submitted that the prior art

cited by the Examiner does not disclose the presently claimed invention.

In the final rejection, the Examiner states that the Bereman reference discloses a tobacco smoke filter containing activated carbon wherein the smoke compounds and the organic volatile and semi-volatile phases diffuse through the carbon particles, move over the surface and into activated carbon pores. The Examiner further states that activated carbon can have micropores of less than 2 nm in diameter, and mesopores of 2 to 50 nm in diameter. What the Examiner does not point out is that this reference discloses that mesopores having a diameter of from 2 to 50 nm in diameter is produced by peat and coal materials while micropores having a diameter of less than 2 nm in diameter are produced from coconut shells. There is no suggestion in this reference that one carbon source could produce both mesopores and micropores in the claimed volume. It has also been noted that the Examiner states that the "at most" language in Claim 1 is inclusive of zero. Applicant respectfully disagrees. The currently presented claims require the presence of micropores. Although a minimum micropore volume is not specified, micropores are required by the claim language. Therefore, Applicant respectfully disagrees with the Examiner's position that currently presented Claim 1 reads on a zero micropore volume.

As pointed out in the previous Response and admitted by the Examiner, the Bereman reference has no disclosure with respect to controlling the pore size contained in the activated carbon, let alone control the pore size in a range required by the present claims. In the Bereman reference, the activated carbon only serves as a support. As such, the secondary Garrido et al reference must contain the disclosure that would motivate one of ordinary skill in the art to modify Bereman in a manner that would yield the presently claimed invention. It is respectfully submitted that Garrido et al contains no such disclosure.

The Garrido et al reference is concerned with the effect of gasification by air or carbon dioxide in the development of microporosity in activated carbon. Although this reference discloses that the tailoring of the porosity of activated carbons for use in different types of applications is an aim of many research laboratories, this reference does not suggest that any particular type of porosity is more advantageous in one utility as opposed to another. Therefore, this reference contains no disclosure that would motivate one of ordinary skill in the art to modify the primary Bereman reference in a manner that would yield the presently claimed invention directed to a tobacco smoke filter containing activated carbon having specified micropore and mesopore volumes.

The Baur et al reference is directed to a process for the catalytic hydrogenation of carbocyclic compounds which have olefinic double linkages. This reference has been cited by the Examiner as disclosing macroporous activated carbon having a surface area of about 1 to 8 m²/g and which overlaps the claimed requirement of micropores of over 50 nm diameter providing a surface area of at least 5 m²/g (Hg). Since this reference is concerned with the catalytic hydrogenation of carbocyclic compounds, there is no way one of ordinary skill in the art would consider this reference relevant to activated carbon used in a cigarette filter. Moreover, this reference requires macroporous carriers which practically have no micropores but exclusively macropores (column 2, lines 19-23). So, in effect, this reference teaches away from being used in a utility which requires both micropores and macropores. Applicants respectfully submit that only hindsight provided by the present disclosure is motivating the Examiner to combine this reference with the previously discussed references and this combination does not even present a showing of prima facie obviousness under 35 USC 103(a).

The Hershe et al reference is directed to a composition comprising L-glutathione and a source of selenium for inclusion within a cigarette, cigar or pipe. This reference

has been cited by the Examiner as disclosing a cigarette filter containing menthol and other smoke flavoring agents and activated carbon having a pore-modifying agent, with part of the activated carbon being available for the absorption of the menthol or other flavor. However, there is no disclosure in this reference which suggests that an activated carbon filter used in filtering tobacco smoke could simultaneously absorb vapor phase components contained in tobacco smoke and still adequately release a flavorant. Therefore, there is no disclosure in this reference which would motivate one of ordinary skill in the art to modify the Bereman and Garrido references in a manner that would yield the presently claimed invention.

The references cited by the Examiner do not present a proper showing of prima facie obviousness under 35 USC 103(a) because the Examiner has selected bits and pieces out of the individual references and combined them to the total disregard of the disclosures and requirements of the references as a whole. Moreover, even if the Examiner had made a proper rejection under 35 USC 103(a), which does not exist in the present situation, the Examples and Comparative Examples contained in the present specification are more than sufficient to rebut any proper showing of prima facie obviousness under 35 USC 103(a).

In the Examples contained on pages 5-9 of the present specification, Examples B, C, D and H all utilize an activated carbon material according to the present invention while Comparative Example A used a coconut-based carbon as is typically used in prior art cigarette filters and Comparative Examples E-G and I-M use carbons having a pore structure outside that of the present invention but closer to the present invention than any of the prior art cited by the Examiner. As shown by the results contained in the Table on pages 8 and 9 of the present specification, the activated carbon of the present invention provided both effective removal of vapor phase components from tobacco smoke and still

had an improved release of the flavorant as compared with the comparative carbons. This is clearly not suggested in any of the prior art cited by the Examiner and establishes the patentability of the presently claimed invention thereover.

The Examiner is respectfully requested to reconsider the present application and to pass it to issue.

Respectfully submitted,



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